

Amendment and Response Under 37 C.F.R. 1.116

Applicant: David Vaughn
Serial No.: 10/622,847
Filed: July 18, 2003
Docket No.: A126.115.102
Title: OPTICAL THROUGHPUT CONDENSER

REMARKS

The following remarks are made in response to the Final Office Action mailed December 19, 2005. In that Office Action, the Examiner rejected claims 9-20 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. However, only seven claims (9-15) are pending in the case. Applicant assumes this was a typographical error. Claims 9 and 15 were further rejected under §112, second paragraph as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. Claims 10-14 were rejected because of their dependency upon claim 9.

Claims 9, 10, and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zou et al., U.S. patent No. 6,186,649 ("Zou"). Claims 11, 12, and 14 were rejected under 35 U.S.C. §103(a) as being unpatentable over Zou and further in view of Applicant's admitted prior art. Claim 15 was rejected under 35 U.S.C. §103(a) as being unpatentable over Zou.

With this Response, claims 9 and 15 have been amended. Claims 9-15 remain pending in the application and are presented for reconsideration and allowance.

35 U.S.C. §112, Second Paragraph, Rejections

On page 2 of the Office Action, the Examiner rejected all claims under 35 U.S.C. §112, second paragraph. The Examiner indicated that independent claims 9 and 15 were rejected as being incomplete for omitting essential elements. The Examiner further stated that "[T]he omitted elements are: it is not clear of the relationship of the claimed 'gate angle', a thin film gate and how it relates to a sphere as cited in claim 9 and how the thin film related [relates] to a series of light [transmission] as cited in claim 15." The Examiner further discussed this rejection on page 5 of the Office Action, in which he stated that "[I]t is not clear what is meant by the term "gate angle" that is cited in claims 9 and 15 and second the claims is [are] not written that one of ordinary skill in

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the art to [can] understand the claimed invention. The term "gate angle" is not clearly defined in the specification,"

Applicant respectfully disagrees with the Examiner's assertion that there are omitted elements in independent claims 9 and 15. Further, Applicant respectfully disagrees with the Examiner's assertion that the term "angle gate" is not clearly defined in the specification. However, in an effort to further clarify the claimed invention, independent claims 9 and 15 have been amended such that the symbol " Θ_{GATE} " has been inserted in independent claims 9 and 15 after each occurrence of the phrase "gate angle". No new matter has been added to the claims with the present amendment, and no new search is required. The gate angle (Θ_{GATE}) is clearly defined in the present specification, specifically at page 4, lines 9-19 which stated:

" Ω is the solid angle within which a beam or portion of light transmits through substrate 100 and thin film coating 102, rather than reflects back from thin film coating 102. Θ_{GATE} is the axisymmetric one-dimensional relationship associated with the solid angle Ω such that $\Omega = 2\pi[1-\cos(\Theta)]$ angle equal to one-half of Ω . Light transmissions having an AOI less than or equal to Θ_{GATE} , such as light transmissions 106 and 107, are transmitted through thin film 102 via angle gate 104 and substrate 100 to a final desired destination. Conversely, beams or portions of light having an AOI greater than Θ_{GATE} , such as light transmission 108, are not transmitted through angle gate 104 and are reflected back away from thin film coating 102 (towards the top of Figure 1)."

With reference to the Examiner's assertion that there are omitted elements of independent claims 9 and 15, Applicant asserts that all elements are spatially connected to each other such that there is no omission amounting to a gap between the elements. Specifically, with reference to independent claim 9, the optical illumination system includes a transmissive substrate positioned in proximity to the illuminating source. Further, the thin film coating is positioned on a surface of the transmissive substrate and the integrating sphere is positioned such that light transmissions reflecting back from the thin film are directed within the integrating sphere and

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subsequently redirected towards the thin film coating. Likewise, with reference to independent claim 15, the method of re-concentrating light within an optical illumination system includes transmitting a series of light transmissions from an illuminating source. The series of light transmissions are directed towards a thin film such that one portion of the series of the light transmissions transmits through the thin film and a second portion of the series of light transmissions reflects back from the thin film. The second portion of the series of light transmissions are then redirected towards the thin film, whereby a final product of light transmission equals all light portions transmitted through the thin film. There is no omission or disconnect amounting to a gap between the elements or steps of independent claims 9 and 15.

It is believed that there is proper antecedent basis for all claimed elements, and that there is no omission or gap between the claimed elements or steps. Therefore, Applicant respectfully requests that the rejection of claims 9-15 under 35 U.S.C. §112, second paragraph, be withdrawn.

35 U.S.C. §103 Rejections

On pages 2-5 of the Office Action, the Examiner rejected claims 9-15 under 35 U.S.C. §103(a) as being unpatentable over Zou. Regarding Independent claim 9, the Examiner indicated that Zou discloses a liner illumination source and system having an illuminating source 402, a transmissive substrate 418, and an integrating sphere 404. The Examiner further indicated that the substrate 418 can have a thin film coating, referencing column 10, lines 61-67.

Applicant respectfully disagrees with the Examiner's summation as to the disclosure within Zou. Specifically, Zou does not disclose a thin film coating in connection with substrate 418, nor does Zou disclose a gate angle (Θ_{GATE}) of a thin film coating. With reference to a thin film coating in connection with a transmissive substrate, Zou states "some of the light undergoes reflections from the inner surface of side walls 420 and 422 and from the inner surface of the optional side walls 434 and

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436. The reflections may occur by TIR if the side walls 420, 422, 434, and 436 are uncoated or may occur by normal reflection if the side walls are coated with a reflective coating." The reflective coating of Zou is not used in conjunction with input surface 418, which the Examiner cites as disclosure of a transmissive substrate. Rather, the reflective coating is disclosed in connection with side walls 420, 422, 434, and 436, none of which are transmissive substrates permitting transmission of light, as claimed. Thus, Zou does not disclose a thin film coating positioned on a transmissive substrate through which some light transmissions are provided, while other light transmissions are reflected back from the transmissive substrate, as claimed.

With reference to an angle gate (Θ_{GATE}), Zou does not disclose a thin film coating including a gate angle (Θ_{GATE}) such that light transmissions striking the thin film coating at an angle of incidence less than or equal to the gate angle (Θ_{GATE}) transmits through the thin film, while light transmissions striking the thin film coating at an angle of incidence greater than the gate angle (Θ_{GATE}) reflects back from the thin film, as claimed in both independent claims 9 and 15. Rather, Zou discloses input surface 418 which permits any and all light transmissions to pass through. No light transmissions are reflected back. Additionally, Zou does not disclose a gate angle of a thin film coating or disclose a thin film coating positioned on a transmissive substrate. Clearly, Zou does not disclose the claimed invention since Zou does not discuss a thin film or a thin film coating positioned on a transmissive substrate such that the thin film or thin film coating includes a gate angle (Θ_{GATE}). There is no mention in Zou of any angle gate (Θ_{GATE}).

Applicant respectfully requests that the rejection of independent claims 9 and 15 under 35 U.S.C. §103 with withdrawn. In addition, dependent claims 10-14 depend from independent claim 9. Since it is believed that independent claim 9 is distinguishable over the cited art of record, it is also believed that dependent claims 10-14 are patentable over the cited prior art of record. Therefore, it is respectfully requested that the rejection of all claims under 35 U.S.C. §103 be withdrawn.

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CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 9-15 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 9-15 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 50-0471.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any Inquiry regarding this Amendment and Response should be directed to Michael R. Binzak at Telephone No. (612) 573-0427, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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CERTIFICATE UNDER 37 C.F.R. 1.8:

The undersigned hereby certifies that this paper or papers, as described herein, are being transmitted via telefacsimile to Examiner John A. Ward of Group Art Unit 2875. Fax No. (571) 273-8300 on this 17th day of February, 2006.

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